# MEMORANDUM TO VENICE CITY COUNCIL

**THROUGH CHARTER OFFICER**: Edward Lavalle, City Manager  **E-SIGN**:
**FROM**: Charlie Thorpe, Chief of Police *CT*
**DEPARTMENT**: Venice Police Department

**DATE**: May 03, 2023          **MEETING DATE**: Tuesday, May 23, 2023

**SUBJECT / TOPIC**:  Approval for the use of Forfeiture Funds to purchase Laser Imaging Scanner and Software.

**BACKGROUND INFORMATION**: The purpose is to purchase a laser scanner and associated software to be used for 3D laser imaging of Crime and traffic Homicide Scenes. This software enables the creation of factual diagrams and detailed analyses, results that can be presented and shared in a compellingly visual and easy-to-comprehend way. We are seeking approval of the Mayor and City Council to utilize the forfeiture funds in the approximate amount of $37,000.00 to offset half the cost for purchase.

As required by Florida law, Chief Thorpe certifies that this request complies with the provisions of the Florida Contraband and Forfeiture Act under Section 932.7055(5)(a), Florida Statutes.

**SUPPORTS STRATEGIC PLAN**: Goal Two: Provide Efficient, Responsive Government with High Quality Services

**COUNCIL ACTION REQUESTED**: For Council Adoption by Consent Motion

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Yes   N/A
☑    ☐    Document(s) Reviewed for ADA compliance (required if for agenda posting)
☑    ☐    City Attorney Reviewed/Approval
☐    ☑    Risk Management Review
☑    ☐    Finance Department Review/Approval
           Funds Availability (account number): 106-1001-521.64-00

Original(s) attached:  Camera Brochure, Estimate, FARO Zone Software Information
 Cc: Charlie Thorpe, Chief of Police,
     Eric Hill, Captain
     Todd Reale, Administrative Coordinator

# Estimate

![FARO logo]

**Estimate Date:** Tue, 07 Feb 2023
**Prepared for:**

## Venice PD perpetual software

**\*Please be aware sales tax and shipping are not included this estimate\***

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## Items in Estimate:

| Part# | Desc. | Unit Price | Qty | Totals |
|---|---|---|---|---|
| LS9-HU | FARO Focus Premium USA | $ 41,860 | 1 | $41,860 |
| ACCS-PWR-0014 | Power Block | $ 610 | 1 | $610 |
| ACCSS8032 | Carbon Fiber Tripod | $ 1,200 | 1 | $1,200 |
| COMP0123X64 | VR Ready Notebook | $ 5,590 | 1 | $5,590 |
| TR-FZ3-COR | FZ Core Training | $ 0 | 1 | $0 |
| TR-SCN-POS | Free POS FARO Facility Training | $ 0 | 1 | $0 |
| TR-SCN-POS-FOR-O | Onsite Forensics Cust-Site Upg. 5 day | $ 9,130 | 1 | $9,130 |
| SV2-SCN-Y2 | FOCUS Core/Premium Complete Care-Year 2 | $ 1,800 | 1 | $1,800 |
| ACCS-CASE-0012 | Focus Standard Tripod Bag | $ 150 | 1 | $150 |
| SOFTL0001 | Single User Soft Lock | $ 0 | 1 | $0 |
| SOFTD51007 | FARO Zone 3D Expert Digital Download | $ 7,200 | 1 | $7,200 |
| SOFTL0001 | Single User Soft Lock | $ 0 | 1 | $0 |
| SOFTD0900 | SCENE | $ 6,110 | 1 | $6,110 |

**Total Price:** $73,650

## Optional Items:

| Part# | Desc. | Unit Price | Qty | Totals |
|---|---|---|---|---|

**Optional Total Price:**

**This is a non-binding estimate of software, hardware, and associated services. This estimate does not constitute an agreement, commitment, or offer of sale (expressed or implied) on the part of FARO and**

# FARO® Zone
## Software



**FARO®**

# FARO Zone Software **makes scene documentation easy** so you can get on with the rest of your job.

As a public safety professional, measuring and documenting a scene is a critical aspect of your job and one that your team relies on for complete and accurate documentation. FARO³ Zone 2D, 3D Pro and 3D Expert Software enables the creation of factual diagrams and detailed analyses, results that can be presented and shared in a compellingly visual and easy-to-comprehend way.
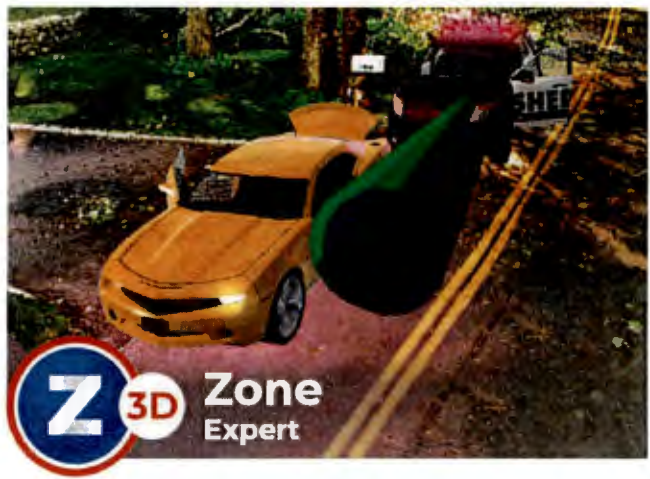
## Forensic Scene Investigation

- Crime scene investigators can reconstruct the details of a crime by applying the validated blood spatter analysis and bullet trajectory tools.

- Crash reconstructionists use FARO Zone 3D Pro and Zone 3D Expert to complete precise diagrams and realistic animations from scene measurements captured by laser scanners, total stations, drones and Event Data Recorder (EDR) downloads. Analysis tools provide the ability to estimate vehicle speeds with calculations for momentum, crush, skid marks and more.

## Crash Report Diagramming

- Use FARO Zone 2D to quickly create simple, yet accurate, crash scene diagrams like those commonly attached to law enforcement crash reports.

- Start with an aerial map of the crash location, add vehicle symbols, signs, and notes, save the diagram (pdf, jpg, or png) and attach it to your report in as little as five minutes.

- Administrative tools are included to set up Zone Software for all users in the agency to save the diagram to the desired format, size, and location for your reporting system.

## Pre-Incident Planning

- With FARO Zone 2D, 3D Pro or 3D Expert, it is fast and easy to use an aerial map or drone data from EagleView, Google, or Bing to create easy-to-read pre-incident and threat assessment diagrams.

- Add a comprehensive 2D floorplan or an architectural diagram. Show doors, stairs, elevators, control panels, hazardous materials and more with the pre-drawn symbols (such as accepted fire symbols like NFPA 170 and 704 placards) that are included.

- Export diagrams to PDF or image (JPG or PNG) and attach them to your dispatch or pre-planning system so the plans are available to First Responders.

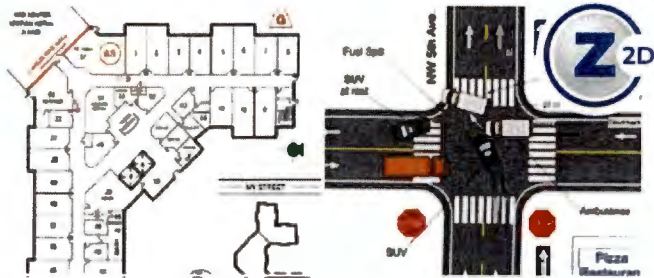**FARO**

**Zone 3D Pro**



**Zone 3D Expert**

For forensic investigators, FARO Zone 3D Pro provides the ability to use point cloud data for creation of courtroom deliverables. Import manual measurements, aerial photographs, laser scans or total station data to quickly create 2D and 3D scene diagrams.

- **Point Cloud Capability**
  This latest edition of Zone 3D Pro can import point cloud data from laser scanners in .pts and .E57 formats, directly from FARO SCENE projects, and from drones in .las file format. Once a scene is preserved as a point cloud, it can be used to digitally obtain accurate measurements, analyze the evidence, verify a witness perspective, animate crashes and more.

- **Precise, Fast Drawings**
  Extensive drawing tools, paired with object grips and automatic snaps, make it easy to create accurate 2D and 3D diagrams to exact measurements.

- **Save Time**
  Complete diagrams quickly with the huge library of models or import new ones.

- **Compelling 3D Results**
  Create realistic flythroughs, vehicle and human animations with shadows, rain, snow, fog, animated vehicle headlights, brake lights and traffic lights.

- **Easy to Use**
  Features an intuitive user interface with constant feedback, helpful how-to videos, comprehensive documentation, integrated workflow guides and free instructor-led, online training.

- **Data-Agnostic Compatibility**
  Open diagrams from CAD Zone, ARAS, and other standard CAD formats. Bring in measurements from manual methods, drone photos, satellite maps, data from total stations, and data from laser scanners, even if they're made by different manufacturers.

- **Share with Anyone**
  Free viewing software and the Zone 2go presentation tool makes it easy to share projects with anyone. No internet required.

Includes all the features of FARO Zone 3D Pro — like the ability to use point clouds from laser scanners and drones — plus convert photographs to a point cloud, determine witness perspectives, create extremely realistic animations, and share the results in a virtual reality environment. Being prepared for court was never as easy with the most data agnostic version of this software yet.

- **Ensure Accuracy**
  Take all your measurements from the point cloud captured at the scene. Snap to specific data points to create accurate diagrams, export chosen points with "virtual surveyor" mode, and use point clouds to create stunning animations and VR scenes.

- **One Software Does It All**
  FotoPoints is the Zone 3D Expert photogrammetry engine, allowing you to import photographs from any source and convert it to a point cloud, thus eliminating the need for third-party software.

- **Fully Analyze Scenes**
  Analyze the scene with confidence using the independently validated tools for bullet trajectory and blood spatter pattern analysis. Crash analysis tools apply accepted formulas to perform crush analysis, calculate speed from skid marks, critical speed yaw, momentum and more.

- **Easy Workflow**
  Merge and align point clouds, or use point cloud models, to place vehicles that were removed back into the scene of the crash.

- **Photo-Realistic Results**
  Create incredible 3D environments with multiple light sources, grass that grows, car doors and hoods that open, and enhanced material textures for stone, brick, wood, metal, water and more.

- **Custom VR Training Scenarios**
  Turn any scanned scene into an exciting VR training scenario, take photos and measurements, pick up evidence, and swab for DNA samples, all while completely immersed in the VR forensic scene.

**FARO**

## FARO Zone 2D

This inexpensive software can be easily deployed throughout the entire department and helps law enforcement officers create 2D crash report diagrams in as little as five minutes. FARO Zone 2D is also the ideal software to quickly create detailed, pre-incident plan diagrams. Firefighters and other first responders value these clear, consistent diagrams to help them make critical decisions at the scene when every second counts.

"Crash reconstruction isn't about creating Hollywood theatrics, it's about **finding truth through science**. FARO Zone 3D Expert is what I use **to show the science of a crash**."

**Carl Lakowicz,**
Northpoint Collision Consultants

## FARO Zone System Requirements

| Recommended | FARO Zone 2D | FARO Zone 3D Pro | FARO Zone 3D Expert |
|---|---|---|---|
| **Operating System** | Microsoft Windows 10 | Microsoft Windows 10 | Microsoft Windows 10 |
| **Processor** | Intel i5 or equivalent | Intel i7 or equivalent | Intel i7 or equivalent |
| **RAM** | 4 GB | 16 GB | 16 GB |
| **Hard Drive** | 8 GB free | 12 GB free | 12 GB free |
| **Graphics Card** | DirectX 11 compatible card, such as an Nvidia® Quadro 2000, GeForce 400+ | GeForce GTX 1060 or better; If tiling large images 4GB video RAM minimum | GeForce GTX 1060 or better; If tiling large images 4GB video RAM minimum |
| **VR Requirements** | | | Oculus Rift or HTC Vive plus ports required by headset |

Local Offices in over 25 countries around the world. Go to **www.FARO.com** to learn more.

**FARO**

# FARO®

# Focus Premium

## On-Scene Digital Documentation with Global Reach

# Premium Preview:
# The Ultimate in
# 3D Data Capture

Building on our history of accuracy and reliability, the new FARO˙ Focus Premium Laser Scanner is the fastest, most accurate and connected scanner on the market to date, featuring entirely new components with a proven design.

## Up to 50% Faster Scan Times

Complete scans faster using your regular settings, even in color.

## Super-High Color Resolution

The latest color camera technology enables the Focus Premium to capture scans with up to 266 megapixel color information.

## Two-Year Warranty

An extended standard service window means maximizing the life of this product while reducing the total cost of ownership throughout the device's lifespan. Two years allows for maximum flexibility and the peace of mind knowing that any repairs or defective parts will be replaced.

## A 'Focused' Look

The Focus Premium provides exceptional capturing efficiency, data quality and accuracy for public safety professionals while offering data quality at faster scan speeds. It is capable of reducing on-scene scanning time by up to 50% using your regular settings. Meanwhile, faster loading and system response yields greater data management efficiency when paired with the new FARO Stream mobile app, a solution Focus Premium operators can use on-scene to take pre-registration scans.

### Focus Premium Features:

- Up to 350m scanning range, leading to superior area coverage per scan position

- Smartphone-enabled remote control capabilities, limited only by the range of a Wi-Fi network

- Improved wireless workflow with more stable and faster Wi-Fi operation

- On-site registration, the process of combining multiple scans using common overlap, means faster project completion and real-time awareness of scan errors or missing data — know before leaving the scene if there are data gaps

- Scanner control can be executed on either the app or on the on-board user interface

- Users have easy access to create projects, change scanner settings, manage image resolution, opt for color or black and white scans, group scans through clustering, and add annotations

- Rugged construction and housing can withstand tough day-to-day work

- Integrated high-speed SSD data storage for maximum scan capacity and lighting fast scan processing, plus reliable standard SD card storage
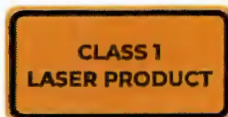
# Focus Premium Specifications

## Performance Specifications

| Unambiguity Interval | 614 m for up to 0.5 MPts/sec | 307 m at 1 MPts/sec | 153 m at 2 MPts/sec |
|---|---|---|---|
| Range[1] | White:<br>0.5 – up to 350 m | Dark-grey:<br>0.5 – up to 150 m | Black:<br>0.5 – 50 m |
| Max Speed | Up to 2 MPts/sec | | |
| Range Noise[1,2,3] | White:<br>0.1 mm @10 m<br>0.2 mm @25 m | Dark-grey:<br>0.3 mm @10 m<br>0.4 mm @25 m | Black:<br>0.7 mm @10 m<br>1.2 mm @25 m |
| 3D Accuracy[4] | 2 mm @10 m | 3.5 mm @25 m | |
| Ranging Error[5] | ±1 mm | | |
| Angular Accuracy[6] | 19 arcsec | | |
| LaserHDR | Yes | | |
| Temperature Range[7] | Operating:<br>+5 ° to +40 °C | Extended Operating:<br>-20 ° to +55 °C | Storage:<br>-10 ° to +60 °C |

## Additional Performance Specifications

### Color Unit

| | |
|---|---|
| Color Resolution | Up to 266 MPx color |
| Raw Color Resolution | 867 MPx |
| HDR Camera | 13 MPx - 2x, 3x, 5x brackets |
| Parallax | Minimized due to co-axial design |

### Deflection Unit

| | |
|---|---|
| Field of View | 300° vertical[9] / 360° horizontal |
| Step Size | 0.009° (40,960 Pts on 360°) vertical / 0.009° (40,960 Pts on 360°) horizontal |
| Max. Scan Speed | 97 Hz (vertical) |

### Laser (Optical Transmitter)

| | |
|---|---|
| Laser Class | Laser Class 1 |
| Wavelength | 1553.5 nm |
| Beam Divergence | 0.3 mrad (1/e) |
| Beam Diameter at Exit | 2.12 mm (1/e) |

### Data Handling and Control

| | |
|---|---|
| Data Storage | SATA 3.0 SSD 128 GB and SDXC™ V30 64 GB SD Card; SD3.0, UHS-I / SDXC™ / SDHC™, max. 512 GB |
| Scanner Control | Via touch screen display and WLAN connection, Control by FARO Stream App (iOS & Android) or mobile devices with HTML5 |

### Interface Connection

| | |
|---|---|
| WLAN | IEEE 802.11 ac/a/b/g/n 2x2 MIMO, as access point or client in existing networks (2.4 and 5 GHz) |
| USB | USB 3 port |

## Additional Features

| Dual Axis Compensator | Performs a leveling of each scan with an accuracy of 19 arcsec valid within ±2° |
|---|---|
| Height Sensor | Via an electronic barometer, the height relative to a fixed point can be detected and added to a scan |
| Compass[10] | The electronic compass gives the scan an orientation |
| GNSS | Integrated GPS & GLONASS |
| On-Site Compensation | Creates current quality report and improves compensation automatically |
| Accessory Bay | The accessory bay connects versatile accessories to the scanner |
| Inverse Mounting | Yes |
| Real-time, On-site Registration | Stream App real-time scan streaming, registration, overview map and Sphere cloud upload |
| Electronic Automation Interface | Available as option, only at point of sale |
| Digital Hash Function | Scans are cryptographically hashed and signed by the scanner |
| Rescanning of Distant Targets | Defined areas recaptured in higher resolution at a greater distance |
| Retake Photos | Select individual photographs with unwanted objects and retake them |
| Tripod Safety | It is recommended that only one tripod segment is used to maximize scanner stability |

## General Specifications

| Power Supply | 19 V (external supply), 14.4 V (internal battery) |
|---|---|
| Typical Power Consumption | 19 W idle, 32 W scanning, 72 W charging |
| Typical Battery Operation Time | About 4 hours |
| Typical Scan Time[8] | About 1 min |
| Ingress Protection (IP) Rating Class | 54 |
| Humidity | Non-condensing |
| Weight | 4.4 kg (including battery) |
| Size/Dimensions | 230 x 183 x 103 mm |
| Calibration | Recommended annually |
| Manufacturer Warranty | 2 years |

**CLASS 1 LASER PRODUCT**

1. White 90% Reflectivity, Dark-gray 10% Reflectivity, Black 2% Reflectivity, for a Lambertian scatterer | 2. Ranging noise is defined as the variation of distance samples from repeated measurements of a single point at 122k Pts/sec | 3. Some surfaces can lead to additional noise | 4. For distances larger 25 m add 0.1 mm/m of uncertainty | 5. Ranging error is defined as a systematic measurement error at around 10 m and 25 m |6. It is recommended to perform on-site compensation in the event the unit is exposed to exceptional temperature or mechanical stress|7. Low temperature operation: scanner has to be powered on while internal temperature is at or above 15° C. High temperature operation: additional accessory Thermal Cover required | 8. Accelerated Profile with PanoCam | 9. 2x150°, homogeneous point spacing is not guaranteed | 10. Ferromagnetic objects can disturb the earth magnetic field and lead to inaccurate measurements

All accuracy specifications are standard deviations, after warm-up and within operating temperature range; unless otherwise noted. Subject to change without prior notice

## A Productivity Workflow Solution

The new FARO Stream mobile app makes the amount of time law enforcement must remain on-scene more productive and safer for everyone. This app gives public safety professionals a new unique capability: the ability to pre-register scans on-site. Once they've taken the scan, they can see the scan outlines in real-time and make positional adjustments to ensure all the evidence is accurately captured the first time. It also eliminates the need for an on-scene laptop or return trips. Investigators can also include complementary data like field annotations and photographic images after a scan is complete.

## Snap-In Success

The new Focus Premium is also designed to work seamlessly with the FARO Freestyle 2 Handheld Scanner, thanks to its "Snap-In" feature. Save the time that is required for multiple scanner positions when it comes to scanning complex scenes with multiple pieces of evidence. Snap-In enables the user to seamlessly add data starting from a Focus Laser Scanner point cloud by using it as a reference for missing data from such hard-to-scan locations, including areas in shadow and objects with irregular shapes and sizes.

The two point clouds are then pre-registered in the same project. Together Focus Premium and Freestyle 2 achieve what neither tool can do alone — provide both the speed and granularity of data capture to ensure that no on-scene detail is missed.

## Streamline Digital Workflows

Whether it's for crime scene analysts, crash reconstructionists, forensic investigators, or for courtroom testimony and 3D photorealistic visual representations, the new Focus Premium Laser Scanner, paired with Stream, enables enhanced workflow efficiencies that will help public safety professionals provide the closure and answers all parties seek.

With the Focus Premium and Stream, users can gather data faster and be more confident in the on-scene data evidence they collect.
**Contact your local sales representative or visit FARO.com to learn more.**

**FARO.**